

SNI

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PALM KERNEL OIL

INDONESIAN STANDARDIZATION COUNCIL

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PALM KERNEL OIL

1. SCOPE

This standard specifies the description, classification, quality requirements, methods of sampling, methods of test, label requirements and methods of packing for Palm Kernel Oil.

2. DESCRIPTION

Palm Kernel Oil shall be the white-yellowish oil obtained by extraction from the fruit kernel of *Elaeis guineensis* Jacq.

3. CLASSIFICATION

Palm Kernel Oil shall be classified into one grade.

4. QUALITY REQUIREMENTS

Tabel
Quality Requirements Specification

No	Type of test	Unit	Requirements
1	Free Fatty Acid (as lauric acid), (weight/weight)	%	max. 5.0
2	Impurities content (weight/weight)	%	max. 0.05
3	Moisture content (weight/weight)	%	max. 0.45

5. SAMPLING

5.1. In Drums

The sample shall be taken at random from the square root of the number of drums in a consignment with a maximum of 30 drums per consignment. The sample shall be taken from each drum with sampling tube with valve of 125 cm in length and a diameter of \pm 2 cm.

The orifice of the pipe can be closed or opened by a long stemmed plug. By immersing this pipe into the drum, the oil shall be sampled from the upper layer down to the bottom layer. Samples shall be taken at four diagonally opposite corners and the four samples are then mixed together and from this mixture 1 kg shall be taken for analysis.

5.2. In Bulk

The sample shall be taken as a systematic sampling using the specific equipments as much as 1 kg of sample from the outflow tap of the pipe through which the oil flows from the land tank to the ship.

The sampling official shall be a person with experience or training and employed by a legal body.

6. METHODS OF TEST

6.1 Determination of Free Fatty Acid

6.1.1 Principle

Dissolution of a test portion in a mixed solvent, followed by titration of the free fatty acids present with ethanolic solution of potassium hydroxide.

6.1.2 Reagents

6.1.2.1 Ethanol 95% (v/v)

6.1.2.2 NaOH 0.1 N, Standard volumetric solution

6.1.2.3 Phenolphthalein Indicator solution 1% in 95% (v/v) alcohol

6.1.3 Apparatus

6.1.3.1 Erlenmeyer flask 250 ml

6.1.3.2 Water Bath

6.1.3.3 Burette

6.1.3.4 Measuring glass

6.1.4 Test Procedure

- 6.1.4.1 Weigh to the nearest 10 mg about 2 - 50 g of the sample into a flask
- 6.1.4.2 Heat to boiling 50 ml of the ethanol in a second flask. While the temperature of the ethanol is still 70°C neutralize with the KOH 0.1N solution, using 0.5 ml of phenolphthalein
- 6.1.4.3 Add the solution from the second flask into the test portion in the first flask and heat to the boiling point and titrate to the end point with the KOH 0.1N solution.

6.1.5 Expression of results

Express the results as a percentage by mass of lauric acid using the formula:

$$\text{Lauric acid} = \frac{2.00 \text{ T N}}{\text{W}}$$

Where :

T is the volume (ml) of NaOH used for the titration.

N is the normality of NaOH

W is the mass (g) of the sample.

6.2 Determination of Impurities Content

6.2.1 Principle

Treatment of a test portion with an excess of *n*-hexane or light petroleum, then filtration of the solution obtained. Washing of the filter and residue with the same solvent, drying at 103 ±2°C, and weighing.

6.2.2 Reagents

- 6.2.2.1 Petroleum ether or n-Hexane. boiling range 40°C to 60°C, bromine value less than 1
- 6.2.2.2 Carbon disulphide, freshly distilled before use

6.2.3 Apparatus

- 6.2.3.1 Analytical Balance
- 6.2.3.2 Filter paper Whatman No. 41
- 6.2.3.3 Gooch crucible and fiber glass, silica crucible
- 6.2.3.4 Oven
- 6.2.3.5 Continues extraction apparatus

6.2.4 Test Procedure

- 6.2.4.1 Weigh about 5 g of sample to the nearest 0.1 g into a flask.
- 6.2.4.2 Melt the test portion, add 250 ml of petroleum ether, close the flask with the ground glass stopper and shake. Allow to stand overnight.
- 6.2.4.3 Decant the solution carefully through an ashless filter paper and dry in the oven at a temperature of $103 \pm 2^\circ\text{C}$.
- 6.2.4.4 Remove from the oven, close the vessel with its lid, allow to cool in the desiccator and weigh to the nearest 0.001 g.

6.2.5 Expression of results

The organic impurities content expressed as a percentage by mass, using the formula :

$$(M_2 - M_1) \times \frac{100}{M_0}$$

Where : M_0 is the mass (g) of the test portion

M_1 is the mass (g) of the vessel with its lid and filter paper or of the filter crucible

M_2 is the mass (g) of the vessel with its lid and filter paper, containing the dry residue or of the filter crucible and dry residue.

6.3 Determination of Moisture Content

6.3.1 Principle

Heating a test portion at $103 \pm 2^\circ\text{C}$ and determining the loss in mass

6.3.2 Apparatus

- 6.3.2.1 Metal dish, flat bottomed with a diameter of 80 mm to 90 mm and a depth of 40 mm to 50 mm
- 6.3.2.2 Oven, capable of being maintained at temperature of $103 \pm 2^\circ\text{C}$
- 6.3.2.3 Desicator, containing an efficient desiccant such as phosphorus pentoxide, silica gel or activated alumina.

6.3.3 Test Procedure

- 6.3.3.1 Weigh in a tared dish about 10 g of sample to the nearest 10 mg.
- 6.3.3.2 Heat the dish containing the test portion for 1 hour in the oven, maintained at a temperature of $103 \pm 2^\circ\text{C}$.
- 6.3.3.3 Remove the dish, allow it to cool in the desiccator and weigh.
- 6.3.3.4 Repeat the heating and weighing of the test portion under the same condition until the difference in mass between two successive weighing does not exceed 2 mg.
- 6.3.3.5 Record the mass of the portion and residue on the work sheet

6.3.4 Expression of results

The result shall be expressed as a percentage by mass, using the formula :

$$100 \frac{(M_0 - M_1)}{M_1}$$

Where :

M_0 is the mass of the test portion (g)

M_1 is the mass of the residue (g)

7. LABELLING

For each shipment, on the outer surface of each drum with non fading paint shall be written :

- a. Produce in Indonesia
- b. Name of company/Exporter
- c. Name of commodity
- d. Code of Production
- e. Net weight
- f. Country of destination
- g. Other important declarations

8. PACKING

Palm Kernel Oil shall be presented as a liquid, in bulk or packed in a clean and dry drum, with a capacity of 200 litres with a head space of 5 - 10 percent. Drums for Palm Kernel Oil should be made of a material iron sheet plate with tin or galvanized iron sheets or iron sheet coated on the inside with a layer which does not affect the Palm Kernel Oil.